

UNIVERSITY OF  
**WATERLOO**

Southern Ontario  
Behavioural Decision Research  
Conference

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UW Centre for Behavioural Decision Research

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## 2012 Southern Ontario Behavioural Decision Research Conference

### Schedule of Events

10:00 - 10:30:	Continental Breakfast / Welcome	Festival Room – 2 <sup>nd</sup> flr South Campus Hall
10:30 - 12:00:	Session A	Festival Room – 2 <sup>nd</sup> flr South Campus Hall
12:00 - 1:00:	Lunch	Festival Room – 2 <sup>nd</sup> flr South Campus Hall
1:30 - 2:30:	Session B	Seminar room (HH 1101) Hagey Hall
2:30 - 3:00:	Coffee break / Poster set up	Don Craig Atrium – 1 <sup>st</sup> floor Hagey Hall
3:00 - 4:30:	Session C	Seminar room (HH 1101) Hagey Hall
4:30 - 6:00:	Poster session with reception and cash bar	Don Craig Atrium – 1 <sup>st</sup> floor Hagey Hall

### Overview of Sessions

#### Session A:

**Soman:** Conservative When Crowded: How Social Crowding Leads to Safety-Oriented Choices

**Bohns:** The “Asking Tax”: Help-Recipients’ Expectations For Requested Versus Voluntary Help

**Grossmann:** Getting Wisdom: Aging, Culture and Perspective

#### Session B:

**Peetz:** When Distance Pays Off: Can Abstract Construal Help Spending Prediction Accuracy?

**White:** Spending Vs. Redemption: How Cash Gifts Differ From Gift Cards

**Maxwell:** Aspiration Levels and Trade-Offs In Business Angel Investment Decisions

#### Session C:

**Mandel:** Prediction Quality in Intelligence Analysis

**Tombu:** How Consistent Are Risk Attitudes: It Depends on the Risk Measure

**Scholer:** Different Desperate Times Call for Desperate Measures

#### Poster Session:

1. **Beckett:** The Effects Of The Metacognitive Cue Of Fluency On Taste Perception
2. **Clemente:** The Effects Of Perceived Product-Association Incongruity On Consumption Experiences
3. **Conway:** Moral Credentials Versus Moral Identity: Conceptual Abstraction Moderates Whether Moral Self-Perceptions Lead To Assimilation versus Contrast Effects On Pro social Behaviour
4. **Ferrey:** Inhibitory Decisions Influence Emotion And Motivation To Act
5. **Hurst:** Spreading Of Choices: Where Perceptual Grouping Meets Representativeness
6. **Joel:** Unpacking The Relationship Stay/Leave Decision Making Process: Breakups Conceptualized As Multi Attribute Choices
7. **Langstaff:** Understanding Choice Preference: The Role Of Reward Cuing In An Experiential Learning Task

8. **Mishra:** Beyond Gains and Losses: The Effect Of Need On Risky Choice In Framed Decisions.
9. **Moher:** A Long Time Ago In A Galaxy Far, Far Way...The Role Of Construal On Unpacking Effects
10. **Ng:** Cultural Differences In Indecisiveness: The Role Of Dialectical Thinking
11. **Palamar:** Melioration Behavior: Unable To Learn Or Unable To Wait?
12. **Pennycook:** Cognitive Style Predicts Supernatural Belief
13. **Semnani-Azad:** Patterns Of Helping Behavior Across Cultures: The Case Of Cultural Fusion
14. **Sparks:** Eye Images Increase Cooperation But Not For Long
15. **Wang:** The Role Of Mindfulness In Affecting Implicit-Explicit Attitude Relations and Food Choice

### **Session A Abstracts**

*Conservative When Crowded: How Social Crowding Leads to Safety-Oriented Choices*

**Dilip Soman**, Rotman School of Management, University of Toronto

(Coauthored with Ahreum Maeng, Rob Tanner)

Might the mere crowdedness of the environment affect individuals' choices and preferences? In five studies, we show that social crowdedness, whether it is subtly primed or actually experienced, not only leads to greater accessibility of safety-related constructs, but also leads individuals to show a greater preference for safety-oriented options (e.g., preferring to visit a pharmacy to a convenience store, or preferring first-aid products over cookies as a free gift choice). Furthermore, we demonstrate that social crowdedness increases receptivity towards preventing-loss framed messages. We argue that this phenomenon results from a prevention focus automatically induced by social crowding. Both practical and theoretical implications are discussed.

*The "Asking Tax": Help-recipients' expectations for requested versus volunteered help*

**Vanessa Bohns**, Management Sciences, University of Waterloo

(Coauthored with Francis J. Flynn, Stanford)

I will present a series of studies demonstrating that help-recipients have different expectations for help-givers who volunteer their help than for help-givers who agree to a direct request for help. Specifically, help-recipients expect help-givers whom they must ask for help to work harder in providing assistance than those who spontaneously volunteer their help. The proposed explanation for this effect is based on the psychological principle that in episodes of social exchange, such as helping, individuals are motivated to maintain a sense of equity and balance between costs and benefits (Thibaut & Kelley, 1959; Zhang & Epley, 2010). This need for "balance" leads help-recipients to expect more from those they ask for help because they had to endure more to obtain the assistance. In other words, help-recipients are recouping their losses—particularly the loss of face—by holding help-givers to a higher level of helpfulness. We call this phenomenon the "Asking Tax" because help-recipients convert the costs involved in asking for help into a "tax" they impose on help-givers. I will demonstrate some initial evidence for the "Asking Tax" and discuss potential mechanisms and moderators.

### *Getting Wisdom: Aging, Culture, and Perspective*

**Igor Grossmann**, Psychology, University of Waterloo

This presentation will illuminate some processes that enable individuals to think and act “wisely.” After reviewing previous wisdom scholarship, I propose that wisdom involves the following set of pragmatic strategies to address social dilemmas: (i) consideration of perspectives involved in the conflict; (ii) recognition of the likelihood of change; (iii) recognizing multiple ways how the conflict might unfold; (iv) recognition of uncertainty and the limits of knowledge; (v) search for a compromise; and (vi) prediction of conflict resolution. I validate this characterization of wisdom by a group of professional counselors and wisdom researchers and show that high scores on wise reasoning are positively related to individual well-being and longevity. Using this characterization I examine aging and cultural differences in wise reasoning simultaneously among random samples of Japanese vs. Americans. Findings indicate that younger Japanese reason more wisely than young Americans. Yet older Americans are as wise as older Japanese, because Americans may gain in wisdom over the lifespan. These results, suggest that aging plays a larger role in the attainment of wisdom in Western than in East Asian cultures. I conclude by reporting a set of experiments demonstrating that a distanced perspective on the self enhances wise reasoning, attitudes, and behavior in domains of interpersonal transgressions, and political and future career decision-making.

### **Session B Abstracts**

*When distance pays off: Can abstract construal help spending prediction accuracy?*

**Johanna Peetz**, Psychology, Carleton University

(Co-authored with Roger Buehler, Wilfrid Laurier University)

We examine the role of temporal distance in predictions about future behaviour. Distance might induce people to use better cognitive strategies, such as adopting an outside view of a problem (use of baseline information, past experiences). Distance might be especially helpful for predictions of repeated behaviour that should be relatively easy, yet are often erroneous, such as spending predictions. People often underestimate their personal spending, even when reminded of their previous (identical) spending patterns. We hypothesize that distance might lead to the adoption of an outside view and consideration of baseline information when generating the prediction, thus improving accuracy. Initial studies showed that spending predictions for a week far in the future were higher than predictions for a close week, and that greater psychological distance was linked to higher spending predictions. Study 3 demonstrated that participants with an induced high level construal mindset predicted to spend significantly more in the next week than participants with an induced low level construal mindset. This increase in predicted spending led to an elimination of the usual optimistic bias, as there was no effect on actual spending. Study 4 examined the process by which distance increased spending prediction accuracy. Participants predicting spending for a distant week reported focusing more on base rate information such as their own spending in past weeks, than participants who predicted spending for a close week.

*Spending vs. Redemption: How Cash Gifts Differ From Gift Cards*

**Rebecca White**, Booth School of Business, University of Chicago

(Co-authored with Oleg Urminsky)

We investigate how the format in which people receive gift funds, as either a cash gift or a gift card, influences how those funds are mentally categorized and spent. First, we demonstrate that the presentation of a gift card rather than an equivalent cash gift leads to significantly greater spending, with intended and actual spending exceeding the amount of the original gift on average. Payment mechanism differences do not fully explain the spending boost we demonstrate, which may instead result from the object-like properties consumers associate with gift cards (as opposed to currency-like properties).

*Aspiration Levels and Trade-offs in Business Angel Investing Decisions*

**Andrew Maxwell**, Management Sciences, University of Waterloo

(Co-authored with Moren Levesque, Schulich School of Business, York University)

Most interactions between Business Angels (BAs) and fund-seeking entrepreneurs end in failure. Research into the causes of this high failure rate has been constrained by the private nature of the BA-entrepreneur interaction. We take advantage of a rich set of videotaped BA-entrepreneur interactions to investigate whether BAs use rational decision-making approaches that consider all relevant information or use heuristics that trade off accuracy for efficiency in order to reject business opportunities early in the investment-decision process. In doing so we pay particular attention to the multiple criteria used by BAs to assess the potential of these opportunities in terms of investment return and investment risk, as well as the reasons used to reject these opportunities. We found BAs appear to reject opportunities that fail to meet an aspiration level for both investment return and investment risk, without trading off between them. These findings challenge the belief that BAs use a rational approach that trades off between return and risk and reveal instead the use of heuristics that limit the cognitive effort required to reject business opportunities. Specifically we develop a better understanding of which factors are compensatory and which non-compensatory. Improved understanding of the decision making process allows entrepreneurs to directly address deficiencies in their venture, BAs to improve the accuracy and efficiency of their decisions and governments to develop policies that might enhance success rates.

**Session C Abstracts**

*Prediction quality in intelligence analysis*

**David Mandel**, Defence Research and Development Canada (DRDC) Toronto

Intelligence agencies tend to rely on vague process-based measures of performance during normal periods of operation, and they tend to implement recommendations for performance improvement following failure post-mortems (e.g., the 9/11 Commission Report). The present study represents a rare exception in which the performance of an intelligence division was assessed using standard, quantitative measures of judgment quality, such as calibration, discrimination, and proportion correct. As such, the present research offers a model for outcome-based performance evaluation, at least for predictive assessments. In the present study, 1075 top-secret predictions from federal

government Intelligence Memoranda were statistically analyzed. Intelligence analysts' predictions were expressed on an 11-interval 0/10-10/10 certainty scale. Predictions were well calibrated (CI = .014), had good discrimination (ANDI = .68), and were 92% correctly classified. The shape of the calibration curve indicated an under extremity bias: analysts were under confident across most of the certainty scale with the exception of the 0/10 and 10/10 extremes, where there was slight overconfidence. Analyst experience and the difficulty of judgments had a minimal effect on calibration, but senior analysts had better discrimination than junior analysts and discrimination was better on prediction judged as relatively easier. Overall, the findings reveal a remarkably high level of forecasting quality that might not have been inferred either on the basis of past psychological literature on calibration and overconfidence or on the basis of "failure-of-imagination" and other characterizations of intelligence analysis. Intelligence directors could use the sorts of quantitative methods invoked in the present research to systematically track prediction quality within their organizations. Doing so could confer benefits to analysts, directors, and ultimately the consumers of intelligence products.

*How Consistent Are Risk Attitudes: It Depends On the Risk Measure*

**Mike Tombu**, Defence Research and Development Canada (DRDC) Toronto

(Co-authored with David Mandel)

Risk attitudes are often inferred from the outcome variance of the preferred option in risky choice decision-making problems. Preferring the high outcome variance alternative implies risk seeking, whereas low outcome variance preferences are attributed to risk aversion. Framing decision options in terms of their positive or negative aspects has been shown to result in preference reversals that have been attributed to shifts in risk attitude, but these conclusions hinge on equating risk with outcome variance. Herein, using the standard outcome-variance metric, framing effects were sometimes observed, sometimes absent, and sometimes reversed. However, when risk attitude was inferred from subjective measures of risk, virtually no framing effect was observed. Framing did, nonetheless, affect which option participants found to be more risky. These results challenge the view that decision-makers have volatile risk attitudes. Instead, they reveal relatively stable risk attitudes, but more fluid and malleable perceptions of risk.

*Different Desperate Times call for Desperate Measures*

**Abigail A. Scholer**, Psychology, University of Waterloo

Understanding when people are motivated to take risks is of interest to decision scientists and motivation scientists alike. Using regulatory focus theory as a framework, I propose that the conditions that lead to risky or desperate behaviours will differ depending on an individual's current motivational orientation. Prevention-focused individuals concerned with safety and maintaining the status quo will be most likely to take risks when they feel that they have slipped into loss and a risky action is the only way back to safety. In contrast, promotion-focused individuals concerned with nurturance and advancement will be most likely to take risks when they feel that they are stuck at the status quo or are not making sufficient progress. I'll present several studies using a stock investment paradigm examining these questions. I'll also discuss what these findings suggest for understanding what counts as success and what counts as failure in different motivational systems.

## **Poster Session Abstracts**

### 1. The Effects of the Metacognitive Cue of Fluency on Taste Perception

**Randi Beckett**, Antonia Mantonakis, Bryan Galiffi (Brock University)

The literature overwhelmingly demonstrates that a fluent processing experience (i.e., something that is relatively easy to process) is favoured over a “disfluent” one. Can the metacognitive cue of fluency influence one’s sensory experience? In the context of winery and grape varietal names, some are easy to say (e.g., Peller Estates or Semillon - fluent), whereas others are relatively difficult to pronounce (e.g., Hernder Estates or Scheurebe - disfluent). Participants from the local community were invited to a wine-tasting lab to sample wine. In the first of two experiments, a between-subjects experimental design was employed whereby one group of participants was told that the wine came from a winery called “Titakis” (easy-to-pronounce) whereas another group was told that the wine came from a winery called “Tselepou” (difficult-to-pronounce). A third (control) group also sampled the wine, but was given no winery information. Note that all 3 groups sampled the same wine. Random assignment placed participants into the 3 experimental groups. The dependent measures included taste perception (i.e., liking), willingness to buy, and willingness to pay in dollars. Relative to the control group, participants in the difficult-to-pronounce winery name group showed higher liking ratings, greater buying intentions, and higher willingness to pay for the wine than participants in the control group. There were no differences in ratings between the easy-to-pronounce winery name group and the control group. In the context of grape varietal names, experiment 2 replicated the design and methodology of experiment 1. Participants were told that the wine was made from either the grape varietal “Alexandrouli” (easy-to-pronounce), the grape varietal “Alvarelhao” (difficult-to-pronounce), or no grape varietal information (control). The dependent measures were similar to experiment 1, but perceived uniqueness and perceived rarity were included to determine if the disfluent cue promoted these perceptions in wine consumers. Results are expected to show similar patterns to the results of experiment 1.

### 2. The Effects of Perceived Product-Association Incongruity on Consumption Experiences

**Sarah Clemente** (Brock University)

Extrinsic cues influence consumer preferences (Lee and Thorson 2008). Therefore, congruity between a product (wine) and its extrinsic cue (its sponsor) may affect consumer evaluations. Previous studies on *intrinsic* cue-product incongruity found that only low knowledge (LK) participants had higher preferences for moderately incongruent pairing (Peracchio and Tybout 1996). We investigate the effect of *extrinsic* cue-product incongruity on evaluations, and product knowledge and priming as moderators. Schemas consist of associations that are more or less essential to a concept’s meaning (Collins and Loftus 1975). The more associations within a schema, the weaker each association is (high knowledge, HK, consumers) and vice versa (LK consumers; Quillian 1962). We hypothesize that HK consumers’ will prefer moderately incongruent pairings (athlete-wine pairing is a novel association given their extensive product schema), whereas LK consumers’ preferences will not differ across congruity levels (athlete-wine pairing is not novel given their limited product schema). We used a within-subjects design with three congruity levels (congruent (Vijay Singh, golfer) vs. moderately congruent (Jeremy

Wotherspoon, speed skater) vs. highly congruent (The Rock, wrestler)). Participants (n=115) tasted three samples of the same wine (believed they were different brands) and rated the wine based on liking, willingness to pay and buy, completed a wine knowledge questionnaire (Hughson and Boakes 2001), and ranked their perceived congruity for various male athletes-wine pairings. Our hypotheses are supported. Only HK participants preferred the moderately incongruent pairing; given their extensive schema, the sponsor-product pairing perceived moderately incongruent, which needed resolving and increased evaluations. A schema's activation threshold can be influenced by a prime (Cooper and Shallice 2000). For example, a prime stating that wine is just one of many products sponsored by celebrities will make the celebrity-wine pairing appear novel (higher evaluations for moderate incongruity more likely). We will test this in our next experiment.

3. Moral Credentials versus Moral Identity: Conceptual Abstraction Moderates Whether Moral Self-Perceptions Lead to Assimilation versus Contrast Effects on Prosocial Behaviour

**Paul Conway** (Western) and Johanna Peetz (Carleton)

How do moral self-perceptions affect behaviour? According to the moral credentials literature, moral self-perceptions induce contrast effects. Thus, people who feel moral act *less* prosocial than those who feel immoral (e.g., Monin & Miller, 2001). Conversely, work on moral identity indicates that moral self-perceptions motivate assimilation—people who feel moral act *more* prosocial than those who feel less so (e.g., Reed & Aquino, 2002). We report three studies suggesting that both these propositions may be true. Study 1 indicated that moral self-perceptions of the recent self resulted in a contrast effect, leading to less prosocial behavior, whereas moral self-perceptions concerning the distant self induced assimilation, leading to more prosocial behavior. Study 2 showed that this temporal-self moderation is unique to *self*-perceptions. Study 3 confirmed the underlying mechanisms: conceptual abstraction. Together, these findings suggest that moral self-perceptions involving concrete, recent temporal selves operate as a self-regulatory mechanism, whereas those concerning abstract, distant selves activate identity concerns.

4. Inhibitory Decisions Influence Emotion and Motivation to Act

**Anne Ferrey** (University of Guelph)

Making the decision to respond to a target or withhold a response has affective consequences: stimuli from which attention or a behavioural response has been withheld subsequently receive more negative emotional evaluations than the targets of attention/response. Here we show that response inhibition applied during a Go/No-go task, as well as having affective consequences, also decreases the incentive salience of motivationally-relevant stimuli. Stimuli with strong approach-incentive (erotic images and monetary-gain associated patterns) subsequently received more negative affective evaluations if presented earlier as 'No-go' items than if presented as 'Go' items. Key-presses rewarded by views of erotic images were also reduced if the images were previously encountered as 'No-go' items than as 'Go' items, suggesting prior inhibition affects both 'liking' and 'wanting'.

5. Spreading of Choices: Where Perceptual Grouping Meets Representativeness

**Ada Hurst** (Management Sciences, University of Waterloo)



In a series of experiments, participants search for a randomly hidden prize (positive condition), or try to avoid hitting the randomly hidden penalty (negative condition) in a 9x9 grid of squares. Experimental results indicate that in the positive condition, participants spread their choices on the grid and avoid the edges and the very centre. In the negative condition, participants will stay on or closer to the edge and exhibit significantly less spreading. Subsequent interviews with participants reveal their understanding of randomness and the effect of grouping by similarity and proximity on judgments of probability. The behaviour is discussed using theories of perceptual grouping and representativeness.

6. Unpacking the relationship stay/leave decision making process: Breakups conceptualized as multiattribute choices

**Samantha Joel**, Elizabeth E. Page-Gould, & Geoff MacDonald

(University of Toronto)

Extant research on relationship dissolution has measured desire to stay in a relationship versus leave as a single continuum. The present research conceptualizes breakups as multiattribute choices, whereby a person's motives to stay in the relationship are examined separately from motives to leave. Across three samples of romantically attached individuals, motives to stay versus leave were uncorrelated, and they were differentially predicted by important relationship constructs, including attachment style. Furthermore, this multiattribute choice approach allowed for the distinction to be made between ambivalence (strong stay and leave motives) and indifference (weak stay and leave motives).

7. Understanding Choice Preferences: The role of reward cuing in an experiential learning task

**Jesse Langstaff** and Derek Koehler (Psychology, University of Waterloo)

Previous animal research suggests that in a binary choice task, which consists of a low expected value option (with large infrequent payouts), and a high expected value option (with small frequent payouts), a preference can develop for the low expected value option if rewards are preceded by a cue that is predictive of the imminent reward. The resulting preference would seem to suggest that cuing rewards may cause an overweighting of the expected likelihood of the rare event.

While this behavior could be seen to be analogous to gambling in humans, human experiential learning tasks typically show an underweighting of rare events. We attempt to determine whether cueing of rewards can lead to choice patterns in humans, which are consistent to those in animals, but diverge from typical human performance on experiential learning tasks.

8. Beyond gains and losses: The effect of need on risky choice in framed decisions

**Sandeep Mishra** (Psychology, University of Guelph)

Substantial evidence suggests people are risk-averse when making decisions described in terms of gains, and risk-prone when making decisions described in terms of losses, a phenomenon known as the framing effect. Little research, however, has examined whether framing effects are a product of normative risk-sensitive cognitive processes. In five experiments, we demonstrate that framing effects in the Asian disease problem can be explained by risk-sensitivity theory, which predicts that decision-makers adjust risk-acceptance based on minimal acceptable thresholds, or need. Both explicit and self-determined need

requirements eliminated framing effects and affected risk-acceptance consistent with risk-sensitivity theory. Furthermore, negative language choice in loss frames conferred the perception of high need and led to the construction of higher minimal acceptable thresholds. The results of this study suggest that risk-sensitivity theory provides a normative rationale for framing effects based on sensitivity to minimal acceptable thresholds, or needs.

9. A long time ago in a galaxy far, far away...: The role of construal in unpacking effects

**Ester Moher** and Derek Koehler (Psychology, University of Waterloo)

People typically underestimate the time it will take them to complete various tasks, even when they are familiar with the process of executing those tasks (planning fallacy; Buehler, Griffin & Ross, 1994). One reason that individuals may show a chronic misprediction of completion time hinges on an optimistic perception of the task itself, such that small or unpleasant steps are ignored or perceived as inconsequential to the prediction, when they are in fact important or time-consuming. Support Theory (Tversky & Koehler, 1994) suggests that “unpacking” such steps may help to attenuate the planning fallacy. Indeed, when a task is unpacked into procedural steps, people give longer task completion time estimates, and the planning fallacy is minimized (Kruger & Evans, 2001). Construal level theory (Lieberman & Trope, 1998) suggests that a lower-level construal of a task (“how” concerns) may also foster less optimistic predictions, akin to the underlying mechanism of unpacking a task. Lower-level construals are typically associated with near-future events, whereas higher-level construals (“why” concerns) are associated with distant-future events. We hypothesize that the effects of unpacking on task completion time will be more pronounced for near-future tasks, because the lower-level construal of such events emphasizes feasibility concerns and component steps, whereas unpacking effects will be attenuated for distant-future events. These hypotheses were tested in three studies. We consistently observe that unpacking effects on completion time estimates are attenuated for distant- relative to near-future tasks, and that this attenuation emerges as a result of an abstract conception of the task.

10. Cultural Differences in Indecisiveness: The Role of Dialectical Thinking

**Andy H. Ng** and Michaela Hynie (York University)

Compared to Westerners, East Asians are more likely to hold conflicted evaluations (Ng & Hynie, 2010) but less likely to resolve inconsistencies, termed dialectical thinking (Peng & Nisbett, 1999). As such, committing to a choice among different alternatives may be more difficult among East Asians (vs. Westerners). Hence, we hypothesized that East Asian Canadians (EACs) would be more likely to exhibit choice difficulty and indecisiveness than would European Canadians (ECs). Ninety EACs and 102 ECs completed the Indecisiveness Scale (Frost & Shows, 1993), the Dialectical Self Scale (Spencer-Rodgers et al., 2001), and the Need for Cognition Scale (Cacioppo & Petty, 1982). Results revealed that EACs were more indecisive than ECs,  $t = 2.70$ ,  $p = .008$ , consistent to our prediction. Importantly, the effect of culture on indecisiveness was mediated by dialectical thinking (point estimate = .060, with a 95% biased-corrected confidence interval of .002 to .141). Implications are discussed.

## 11. Melioration Behaviour: Unable to Learn or Unable to Wait?

**Max Palamar** (Psychology, University of Waterloo)

When the long-term consequences of our actions are unclear, we often tend to engage in short-sighted decisions. This behavioural tendency, called melioration, has been characterized as either a problem of being unable to learn what the optimal behaviours are, or as a lack of self-control in actually carrying out these behaviours. The current study examines how a classic melioration task correlates with other variables that might be expected to relate to melioration, depending on which account is correct. To measure melioration, participants completed a binary choice task, in which a meliorating option produced immediately higher rewards and a maximizing option produced overall greater long-term rewards. Their performance on this task was then correlated with measures of risk tolerance, inhibitory control, temporal (delay) discounting and working memory capacity. Significant correlations were found between the rate at which participants adopted a maximizing strategy and working memory and discounting, as well as between overall preference for maximizing and working memory capacity. These correlations suggest a learning account of melioration, where melioration behaviour is attributable to difficulty in identifying the optimal course of action.

## 12. Cognitive Style Predicts Supernatural Belief

**Gordon Pennycook** (University of Waterloo)

An analytic cognitive style denotes a propensity to set aside highly salient intuitions when engaging in problem solving. We assess the hypothesis that an analytic style is associated with a history of questioning, altering, and rejecting (i.e., unbelieving) supernatural claims, both religious and paranormal. In two studies, we examined associations of God beliefs, religious engagement (praying, etc.), conventional religious beliefs (heaven, miracles, etc.) and paranormal beliefs (extrasensory perception, levitation, etc.) with performance measures of cognitive ability and analytic cognitive style. An analytic cognitive style negatively predicted both religious and paranormal beliefs when controlling for cognitive ability as well as religious engagement, sex, age, political ideology, and education. Results for types of God belief indicate that the association between an analytic style and God beliefs is more nuanced than mere acceptance and rejection, but also includes adopting less conventional God beliefs, such as Pantheism or Deism. Our data are consistent with the idea that two people who share the same cognitive ability, education, political ideology, sex, age and level of religious engagement may acquire very different sets of beliefs about the world if they differ in their propensity to think analytically.

## 13. Patterns of Helping Behavior Across Culture: The Case of Cultural Fusion

**Zhaleh Semnani-Azad**, Jesse Langstaff, Wendi Adair, and Yihan Xie (Psychology, University of Waterloo)

Early work illustrates cultural variation in helping behavior because of differences in values, norms, and motivations (Markus & Kitayama, 1991). Our study extends on past research by examining how fusion with one's culture influences helping behavior when interacting with a cooperative versus non-cooperative counterpart. Canadian, Chinese and Indian participants engaged in an intracultural dyadic interaction using a virtual decision making game, FireSim, where they had to protect their village and its assets from seasonal fires with the option of requesting help

and/or providing help to a neighboring village (counterpart). The results illustrate that Canadians (individualists) were less influenced by the situation, as their helping behavior was not significantly affected by partner's helping behavior, compared to Chinese and Indian individuals (collectivists). Moreover, Canadians were less likely to request for help but overall received more help compared to individuals from collectivistic cultures. We also found that the more a person was fused with his or her culture, the more likely that individual would provide help, if partner was cooperative. Potential implications and further research for inter-cultural helping behavior is discussed.

14. Eye images increase cooperation, but not for long

**Adam Sparks** (Barclay Lab for Experimental Evolutionary Psychology, University of Guelph)

Social scientists from a variety of fields use experimental economic games to study cooperative decision making. Outcomes of economic games can be influenced by the formal parameters of the game; participants make more cooperative decisions when games are structured to provide them information about the reputation of other players. Decisions can also be influenced by contextual cues; some studies have shown elevated levels of cooperation by people exposed to images of eyes or faces, though others have failed to replicate this effect. An effort to reconcile the body of findings about the “eyes effect” can usefully inform theoretical debates about the evolution of cooperation and practical efforts to maintain cooperation in real world systems. I report the results of an experiment in which participants showed the effect after a brief exposure to eyes, but not after a longer exposure. Habituation to uninformative cues may account for some of the discrepancies in eyes effect findings.

15. The Role of Mindfulness in Affecting Implicit-Explicit Attitude Relations and Food Choice

**Wan Wang** and Christian Jordan (Psychology, Wilfrid Laurier University)

The present research examined the role of mindfulness in affecting implicit-explicit attitude relations and food choice—a domain of behaviour that is critical to well-being. It was hypothesized that food choice would be associated more with explicit attitudes for more mindful people and that more mindful people would show greater correspondence between implicit and explicit attitudes toward fruits over sweets. Participants ( $N = 157$ ) completed a measure of trait mindfulness, an Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998), two measures of explicit attitudes, and finally chose either a fruit or a sweet as a behavioural measure. In addition, latency (i.e., length of time participants spent to make a choice) was measured by a hidden stopwatch. Results revealed that implicit attitudes alone predicted choice, and so did explicit attitudes alone. Implicit attitudes were highly correlated with explicit attitudes. The effect of implicit attitudes on food choice was mediated by explicit attitudes. However, mindfulness did not increase the correspondence between implicit and explicit attitudes. Instead, participants who were low in mindfulness chose sweets (unhealthy food) more impulsively but spent more time to decide when choosing fruits (healthy food); more mindful people were faster at choosing fruits than sweets. Implications on attitude-behaviour relation and how mindfulness may promote reflective thinking and reduce impulsivity are discussed and future studies are suggested.